

Plague (black plague, bubonic plague, pneumonic plague) is a disease caused by a bacterium (*Yersinia pestis*). This species of bacteria came to the U.S. from Asia and infects small mammals such as rats and mice. Usually the plague bacterium is spread from host to host by a flea that feeds on an infected mammal (it sucks its blood) and then injects the bacterium into a new host when it feeds on another mammal. Sometimes plague becomes pneumonic. This means that the bacteria live in the lungs and can be passed from prairie dog to prairie dog by coughing or kissing (touching noses).

Plague arrived in the US in about 1900, having arrived with infected rats on ships from Asia. Some of the plague bacteria in the United States eventually were carried to the Great Plains where they successfully infected prairie dogs (small social mammals that live as groups in burrows only in the western US). When plague bacteria first arrived in the western US, most of the infected prairie dogs died of plague. In an effort to repopulate the prairie dog towns wiped out by plague, conservationists moved prairie dogs from Colorado (where they were abundant) to areas of Utah where there were none.

When fleas are infected with plague bacteria, their digestive tracts become plugged with these bacteria and the fleas are not able to digest normal amounts of food, thus having fewer food calories available.

Malaria is an infectious disease caused by a unicellular eukaryotic parasite of the genus *Plasmodium*. The parasites are transmitted from one person to another by the female *Anopheles* mosquito. Humans and mosquitoes are both necessary in the life cycle of the parasite. Without an effective treatment, the parasites destroy the red blood cells, and the capillaries that supply blood to the brain may be clogged. At present, 300 million people are afflicted with malaria and 1 to 2 million die from it each year. Malaria has probably killed more people than all the wars and the plagues combined. Quinine is a chemical compound that is synthesized and accumulates in the outer layer of the trunk of a tree of the genus *Cinchona* native to South America. Its natural function is to deter herbivores. Historically, quinine and its derivatives have been effective drugs to cure malaria. Despite many years of quinine use, malaria has not been eradicated because of the emergence of parasites that are resistant to quinine.

Return of the ants!!!!!! After learning all she could about ant mounds our researcher decided to conduct some population surveys of the ants in her research area. She recorded the following results for a 2-acre plot over a period of 3 years:

Year	The number of ants at the beginning of indicated year
1	500
2	600
3	720